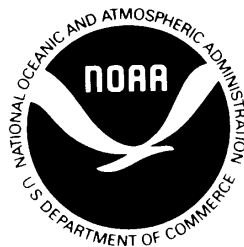


NOAA's Resource Guide

for Teachers of Marine Science



NATIONAL OCEANIC
AND ATMOSPHERIC
ADMINISTRATION

U. S. Dept. of Commerce
Office of Ocean and Coastal Resources Management

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Contents

I.	<i>Elementary School Level Books</i>	3
II.	<i>Middle School Level Books</i>	28
III.	<i>High School Level Books</i>	41
IV.	<i>Teachers' Resources</i>	51
V.	<i>Audiovisual Materials</i>	55
	<i>CD-ROM</i>	55
	<i>Films</i>	56
	<i>Videos</i>	58

Teachers' Resources

Animals of the Seas & Wetlands; Alaska Sea Week Curriculum Series II

Mickelson, Belle, Alaska Sea Grant College Program, 220p. ill.
No. 85-11 of the Alaska Sea Grant Report Series.

Aquatic Project Wild

Charles, Cheryl, California Department of Fish and Game, 1987. ill.
A unit of activities (some hands-on) for teaching about aquatic environments. Organized by theme and accompanied by guidelines for age level, time required, skills used, etc. Gr K-12.

Beneath the Shell: A Teacher's Guide to Nonpoint Source Pollution and its Potential Impact on New Jersey Shellfish

New Jersey Department of Environmental Protection, 1991. ill.
Unit focused on water, water pollution, and the effect of water pollution on marine animals. Focus is on the New Jersey area, but many activities can be adapted for other areas. Gr K-8.

The Center for Marine Conservation Ocean Book

Azimov, Isaac, Wiley, 1989. ill.
A collection of activities, puzzles, experiments, and games created by leading aquatic centers focusing on the oceans, ecosystems, marine animals, adaptations, and ecology. Glossary and list of resources. Gr K-12.

A Child's Place in the Environment: Unit 4, Caring for Aquatic Systems

Clymire, Olga N., California Department of Education, 1994. ill.
This is one of a 6 volume set of grade-level specific science units. Each unit consists of approximately 20 sequential lessons that address a variety of learning styles. Available from Konocti Unified School District c/o Olga Clymire, Lake County Office of Education, 1152 South Main St., Lakeport, CA 95453. Phone (707) 263-7249. Gr 4.

Creek Watchers: Exploring the Worlds of Creeks and Streams

Shinkle, Jill, California Aquatic Science Education Consortium, 91p. ill.
Ten activities teach basic scientific concepts related to the characteristics of creek and stream habitats. Gr 5-9.

Discovery: An Introduction. Alaska Sea Week Curriculum Series.

Mickelson, Belle and others, Alaska Sea Grant College Program, 1983. 161p.
This curriculum guide is the first in the Alaska Sea Week Curriculum Series and is geared to the kindergarten level. Topics include: (1) the ocean; (2) wetlands; (3) marine animals; (4) seashore animals; (5) seaweed; and (6) birds of wetlands, rivers, and seashores. Each unit contains information on student objectives, and activity background, vocabulary, materials, and procedure. Includes an annotated bibliography and a packet of reproducible worksheet masters. Contact: Alaska Sea Grant College Program, University of Alaska, P.O. Box 755040, Fairbanks, AK 99775-5040. ERIC NO: ED384487.

Do You Know Our Marine Algae? A Marine Education Infusion Unit

Butzow, John W. & Charles J. Gregory, Northern New England Marine Education Project, 1982. 65p.
Presents ideas and activities for use in the classroom and in field trips to the shore for middle school teachers. The focus is on the New England marine environment. Activities are designed so that teachers of many different subjects can make use of them. Includes an annotated bibliography. ERIC NO: ED257641.

Do You Know Our Marine Fish? A Marine Education Infusion Unit

Butzow, John W. & Philip Kane, Northern New England Marine Education Project, 1982. 73p.
This unit is focused on the fish of New England, presenting classroom and fieldtrip activities for middle school students. Activities are designed so that teachers of many different subjects can make use of them. Includes an annotated bibliography and teachers' resources. ERIC NO: ED241260.

Florida Marine Education Resources Bibliography. Report Number 51

Gordon, Marjorie R. & Leni L. Bane, Florida Sea Grant College, 1983.

A multidisciplinary, annotated bibliography of marine education materials. The appendix includes a suggested K-12 curriculum for science. ERIC NO: ED235031. Gr K-12.

Fresh Water Guardians: Defending Our Precious Supply

Shinkle, Jill, California Aquatic Science Education Consortium, 53p. ill.

Nine activities teach basic scientific concepts related to the physical characteristics of water and aimed at increased understanding of water pollution. Gr 5-9.

Guidelines for Science Programs for Hearing Impaired Adolescents

Mertens, Donna M., International Congress on Education of the Deaf, 1990. 29p. ill.

This evaluation study examined the implementation of the Marine Science Young Scholars Program, which provide 32 gifted deaf and hearing-impaired adolescents with a 4-week summer enrichment program in 1988 and 1989. The instructional program used a cognitively based curriculum; included labs, lectures, and field experiences; promoted one-to-one interaction; required active learning; and included the topics of the scientific method, the ethics of science, and career awareness. ERIC NO: ED333662.

Hawaii Marine Science Studies (HMSS) project

University of Hawaii Press, 1991. ill.

A one-year marine science curriculum for students of all ability levels in grades 9-12. The fluid earth--physical science and technology of the marine environment, includes water pollution, acid rain, the water cycle, green-house effect, and exclusive economic zones. The living ocean--biological science and technology of the marine environment, includes fish, invertebrates, plants, aquaculture, and ecology. Teachers are required to attend hands-on HMSS training institutes; institutes are arranged upon request anywhere in the U.S., with two units of credit available through the University of Hawaii or other host institution. For information: Dr. Frank W. Mattas, Educational Merchandising and Consulting, 1436 Spring Valley Dr., Roseville, CA 95661; (916)782-3773.

Kids Can Make a Difference! Environmental Science Activities

Dashefsky, H. Steven, TAB Books, 1995. 151p. ill.

More than 160 environmental science activities designed to help students understand environmental issues, ask questions, and find solutions to problems. Introductory sections address: (1) the nature of major global problems and a history of environmental concern; (2) basic environmental science terminology and scientific study of the environment; and (3) how to choose a topic, research the topic, and apply the scientific method. Each of the remaining 10 chapters introduces one environmental science topic and contains suggestions divided into three groups: (1) suggestions for ways to live that protect the environment; (2) step-by-step activities with suggestions on how to convert the activity into a science project; and (3) one science fair project included at the end of each chapter. The topics covered include plastic pollution, pesticides and fertilizers, soil erosion, litter, polluted beaches and coastlines, the open sea, threats to marine life, hazardous wastes, energy conservation (acid rain and global warming), and water conservation. Appendices provide a list of 85 organizations to contact, a list of 12 scientific supply houses, and metric conversions. Contains 17 references, a glossary, and an index. ERIC NO: ED384530.

Living in Water: An Aquatic Science Curriculum for Grades 4-6

National Aquarium in Baltimore, 1989. 315p. ill.

A comprehensive unit about water. Includes physical properties, habitats, how animals live in water, etc. Numerous hands-on activities, corresponding worksheets and tips for setting up and implementing the procedures. Gr 4-6.

Manatees: An Educator's Guide

Marine Mammal Commission, 1994. 33p.

While focusing on the manatee, this guide points out the importance of interdependencies within the whole ecosystem with the goal of promoting informed decision-making, responsible behavior, and constructive actions towards the protection of the manatee and its habitat in Florida. The activities included can be adapted to suit the special needs, ages and abilities of different students and are designed for multidisciplinary study areas. Accompanying this guide is a color poster, "Sirenians of the World," depicting the West Indian manatee and four related species. Topics covered include: natural history, habitat, the hydrologic cycle, other sirenian species, marine mammals, problems, manatee mortality, research and conservation, and public awareness. A list of manatee resources, reference books and audio-visual aids is included. Free to educators. To order, contact Save the Manatee Club, 500 N. Maitland Ave., Suite 210, Maitland, FL 32751. ERIC NO: ED388523. Gr K-5.

MARE: Marine Activities Resources and Education

Strang, Craig, Catherine Halversen and Roberta Dean, Regents of the University of California, 1995. ill.

The Lawrence Hall of Science in Berkeley, CA has developed a comprehensive program for marine science education. Units are available for all elementary age levels focused on the various marine habitats. The individual units may be ordered from Lawrence Hall of Science (510) 642-5008 or through their website: <http://www.lhs.berkeley.edu/EdResources.html>.

Marine & Coastal Educational Resources Directory, San Francisco & Monterey Bay Areas

California Coastal Commission, 1996. 118p. ill.

A detailed guide to organizations providing information and resources on marine and coastal education.

Marine Mammal Activity and Curriculum Guide

Dawson, Arthur, California Marine Mammal Center, 1989. ill.

Activities on marine mammals found along the California coast. Gr K-6.

The Natural Environment: An Annotated Bibliography on Attitudes and Values

Anglemyer, Mary & Eleanor R. Seagraves, Smithsonian, 1984. 268p.

An annotated bibliography of over 800 entries dealing with ethics, attitudes, and values and the relationship of these topics to the natural environment. Contact: Global Tomorrow Coalition, Smithsonian Institution Press, P.O. Box 1579, Washington, DC 20013. ERIC NO: ED257641.

North Carolina Marine Education Manual. Connections: Guide to Marine Resources, Living Marine Systems and Coastal Field Trips

Spence, L. & J. Medlicott, UNC Sea Grant, 1982. 97p.

This collection of teaching and resource materials, focused on coastal North Carolina, is designed to help middle school teachers put marine perspectives into their lessons. Contact: UNC Sea Grant, 105 "1191" Bldg., North Carolina University, Raleigh, NC 27650. ERIC NO: ED237332.

The Ocean Crisis. Our Only Earth Series. A Curriculum for Global Problem Solving

MacRae-Campbell, Linda and Others, Zephyr Press, 1990. 113p.

The "Our Only Earth" series is an integrated science, language arts, and social studies problem solving program for grades 4-12 that addresses six different global issues. The unit presented in this document addresses the problems associated with the pollution and protection of the earth's marine resources. Includes information to assist teachers in organizing and directing students in their activities. This teacher's guide includes a unit overview, instructions on how to collect information through letter writing (including addresses for appropriate organizations), three classroom activities, a set of fact cards, instructions for a scavenger hunt, instructions for a geography activity, instructions for research and independent study, and materials for a youth summit on the oceans. Additional materials included in this packet are a discussion and chart of instructional techniques and thinking skills used in the unit, a glossary of terms and a bibliography of 44 books, articles, other resources, and games on oceans issues. Order from: Zephyr Press, P.O. Box 13448-W, Tucson, AZ 85732-3448. ERIC NO: ED334067. Gr 4-12.

Ocean Waves and Progressive Oscillatory Waves Syllabus

Sluyter, E. H., National Book, 1977. ill.

Comes with 2 recordings, 4 lessons. Syllabus and tests available. Gr 10-12.

A Planning Guide for Field Study Programs: A Guide for Aquatic Field Study Programs

Fox, Barry W. and others, Virginia Cooperative Extension Service, 1993. 100p.

This guide and companion video was developed to assist volunteer leaders and educators in planning and conducting outdoor field study programs. Includes leader's guide and student activities. Order from: Cooperative Extension Distribution Center, Virginia Tech, 112 Landsdowne Street, Blacksburg, VA 24061-0512. ERIC NO: ED390669. Gr K-5.

Salmonids in the Classroom. Intermediate (Grades 4-7)

Department of Fisheries and Oceans, Canada, 1988. 382p. ill.

Presents three units about salmonids: (1) Lifecycle: biology and habitat; (2) Harvesting; (3) Enhancement and stewardship. Teaching strategies, student activities, experiments, and handouts are included. With glossary, audiovisual catalogue and bibliography. Videocassette included. Gr K-3.

Salmonids in the Classroom. Primary (K-3)

Department of Fisheries and Oceans, Canada, 1988. 248p. ill.

An illustrated story about Chucky Chum provides the foundation for an interdisciplinary unit on salmonids. Teaching strategies, student activities and handouts are included along with fieldtrip suggestions. With glossary, audiovisual catalogue and bibliography. Includes posters and two video cassettes. Gr K-3.

Save Our Seas: A Curriculum for Kindergarten Through the Twelfth Grade

Bierce, Rose and Kathy O'Hara, Editors, Center for Marine Conservation and California Coastal Commission, 1993. 106p. ill.

This curriculum guide addresses the problem of marine debris and pollution and is designed to help students realise how they can help. Multiple subject areas are incorporated into the units and numerous activities are offered. Includes index of additional resources. A Spanish language edition is in the works. Gr K-12.

Science in a Seashell: A Critical Look at Clams, Mussels, and Oysters

Louden, Cynthia and Others, Science Teacher, 1995.

A High School level curriculum on mollusks. ERIC NO: EJ509094. Gr 9-12.

Science: Promising and Exemplary Programs and Materials in Elementary and Secondary Schools

Helgeson, Stanley L., 1990. 97p. ill.

Contains 36 programs and/or material listings in four sections: Elementary-Secondary (K-12), Elementary (K-8), Junior High/Middle School, and Secondary (7-12). Topics include physical science, marine biology, environmental education, ecosystems, scientific inquiry, water quality, earth science, and field trips. Nine resource organizations and 26 references are listed. ERIC NO: ED335234.

Sea Animals: A Thematic Unit

Williams, Diane, Teacher Created Materials, Inc., 1993. 80p. ill.

A language experience approach in education focused on marine fauna.

The Voyage of the Mimi

Sunburst Communications, 1990. ill.

A curriculum project developed by Bank Street College which integrates language arts, math, science, and geography using text, computer software, and instructional television. Learning modules include maps and navigation, whales, and ecosystems. Gr 8-12.

Water Inspectors: Examining H₂O

Shinkle, Jill, California Aquatic Science Education Consortium, 50p. ill.

Nine activities teach basic scientific concepts related to the physical characteristics of water. Gr 5-9.

Wet and Wild: A Multidisciplinary Marine Education Teacher Guide, Grades K-6

Murphy, Richard C., Evaluation, Dissemination, and Assessment Center, 1983. ill.

A set of six units developed by the USC Sea Grant Program, organized around themes emphasizing different physical, chemical, and biological, economic and cultural aspects of the marine world. Each teacher guide contains information and activities for grades K-3 and 4-6. Also available in Spanish. Order from: Evaluation, Dissemination and Assessment Center, California State University, Los Angeles, CA 90032. Gr K-6.